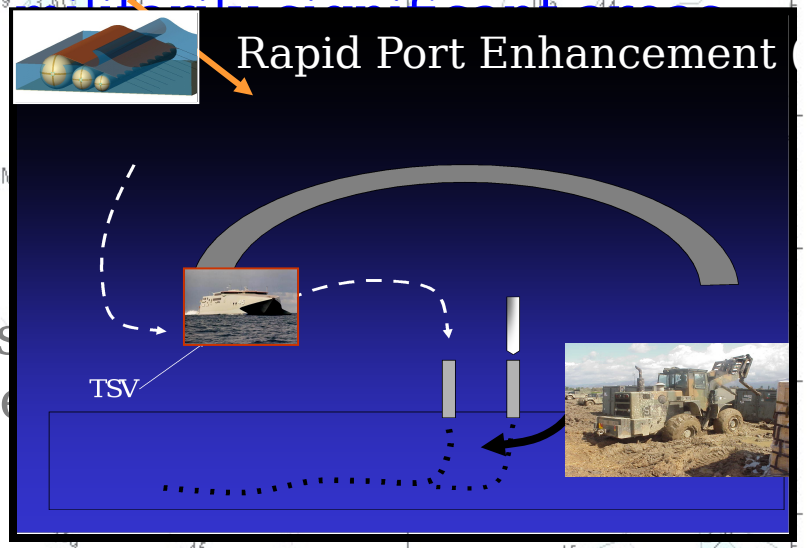
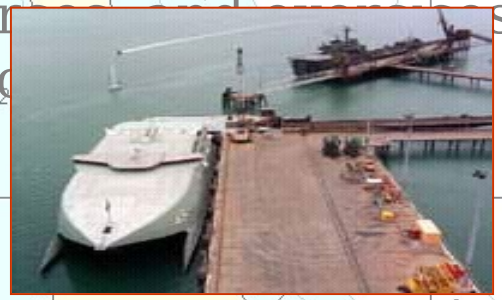
Worldwide Small Port Study

- Identify Theater Support Vessel (TSV) characteristics for Operational Requirements Document (ORD) development
  - Limited area in initial phase of study
  - Data collection focused on port accommodation of TSV
- Small and moderate size ports documented
- Survey all ports in all worldwide
  - Bathometry
  - Topography
  - Infrastructure
  - Required Enhancements
- Develop interactive database to s
  Combatant Command war planne
  operational for





- Rapid pier / breakwater upgrade
- Near shore breakwater system
- Improved floating

Support optimization of intra/inter-theater sealift throughput at

Worldwide Port Study

Background

- Bare beach JLOTS
  - Costly in terms of materiel and manpower
  - Slow
  - Weather/sea state dependent

- Identify, survey, and catalog sufficient numbers of small ports fo draft ships like the TSV

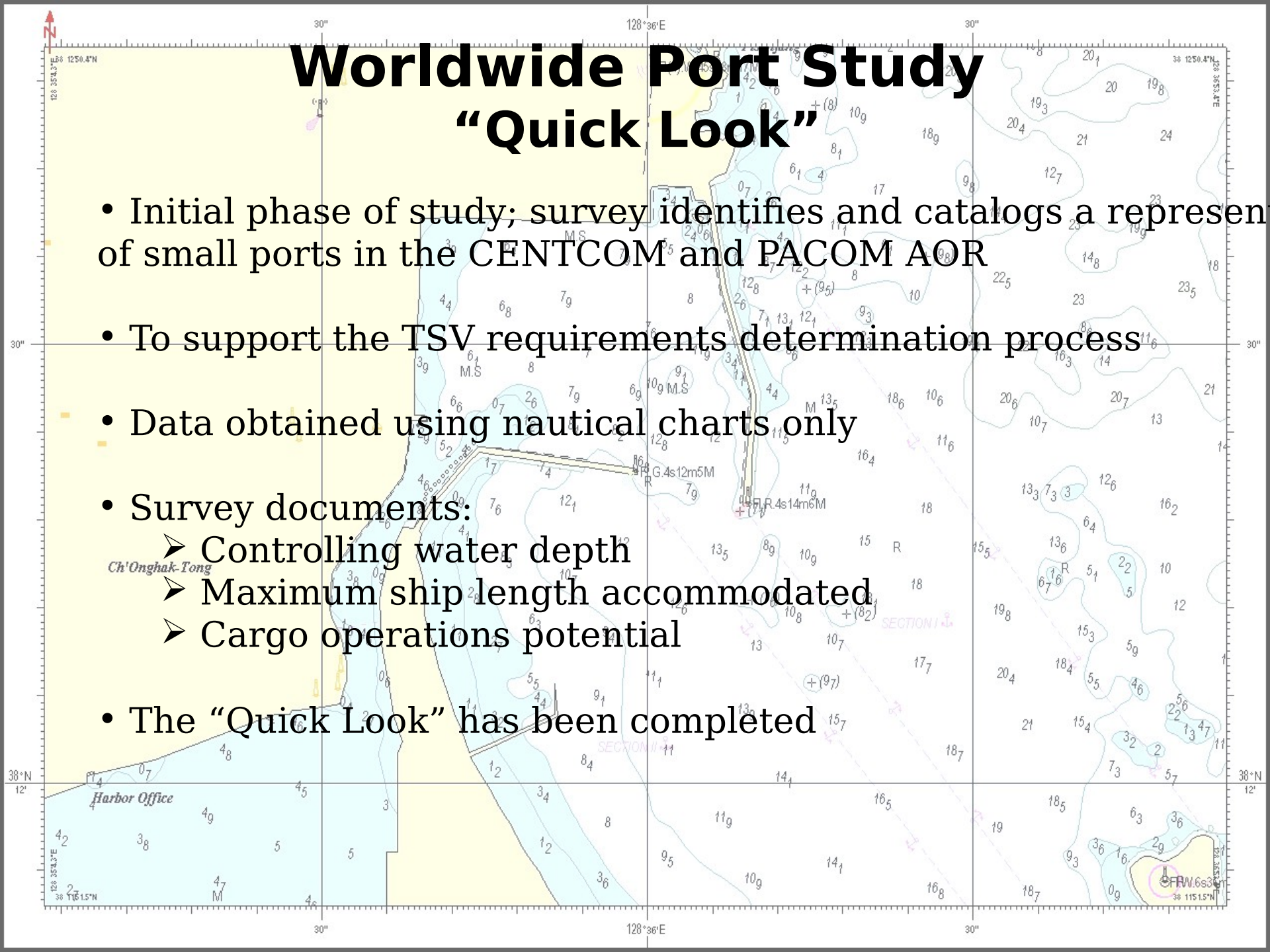
- Supports the Army strategic responsiveness goal of arriving into at multiple austere locations

- Mitigates the threat's anti-access strategy

- Optimizes the throughput capabilities of strategic and intra-thea

Worldwide Port Study
"Quick Look"

- Initial phase of study; survey identifies and catalogs a represen of small ports in the CENTCOM and PACOM AOR
- To support the TSV requirements determination process
- Data obtained using nautical charts only
- Survey documents:
  - Controlling water depth
  - Maximum ship length accommodated
  - Cargo operations potential
- The "Quick Look" has been completed

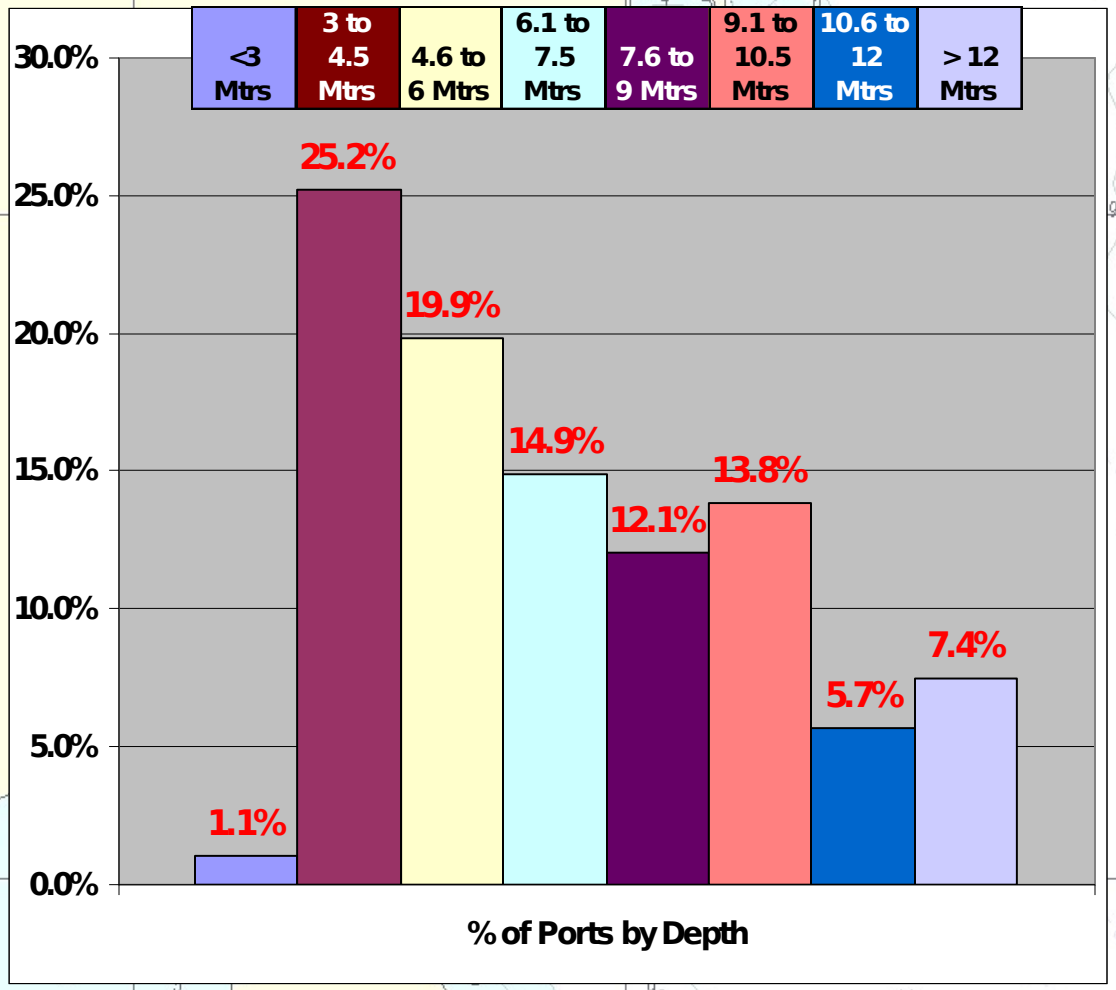


Depth Range

Country	<3 Mtrs	3 to 4.5 Mtrs	4.6 to 6 Mtrs	6.1 to 7.5 Mtrs	7.6 to 9 Mtrs	9.1 to 10.5 Mtrs	10.6 to 12 Mtrs	>12 Mtrs	Total Ports
Bangladesh	0	1	0	0	1	0	0	0	2
Burma	0	1	2	0	1	0	0	0	4
Cambobia	0	0	0	1	0	0	0	0	1
Djibouti	0	1	0	0	1	0	0	0	2
Egypt	0	0	2	4	1	1	1	2	11
Eritrea	0	0	0	0	1	1	0	0	2
India	0	5	2	3	2	3	3	0	18
Indonesia	2	9	6	7	7	14	5	8	58
Iran	0	0	3	0	0	1	2	0	6
Iraq	0	0	1	0	0	0	0	0	1
Israel	0	1	1	0	0	1	1	1	5
Jordan	0	0	0	0	0	0	0	1	1
Kenya	0	1	1	0	0	0	0	0	2
Korea (North)	0	4	2	2	2	1	0	0	11
Korea (South)	1	21	4	2	1	3	0	0	32
Kuwait	0	2	1	0	0	0	0	1	4
Lebanon	0	0	0	1	0	0	1	0	2
Malaysia	0	3	6	1	3	0	0	1	14
Pakistan	0	0	0	0	0	1	0	0	1
Philippines	0	14	19	16	11	4	2	4	70
Somalia	0	1	1	1	0	2	0	0	5
Sudan	0	0	0	0	1	1	0	0	2
Syria	0	0	1	0	0	0	1	1	3
Taiwan	0	1	3	1	1	1	0	1	8
Thailand	0	2	0	0	1	2	0	0	5
VietNam	0	4	1	3	0	3	0	1	12
Total Ports	**3**	**71**	**56**	**42**	**34**	**39**	**16**	**21**	**282**
% of Ports by Depth	**1.1%**	**25.2%**	**19.9%**	**14.9%**	**12.1%**	**13.8%**	**5.7%**	**7.4%**	

- 26 Countries
- 282 Ports

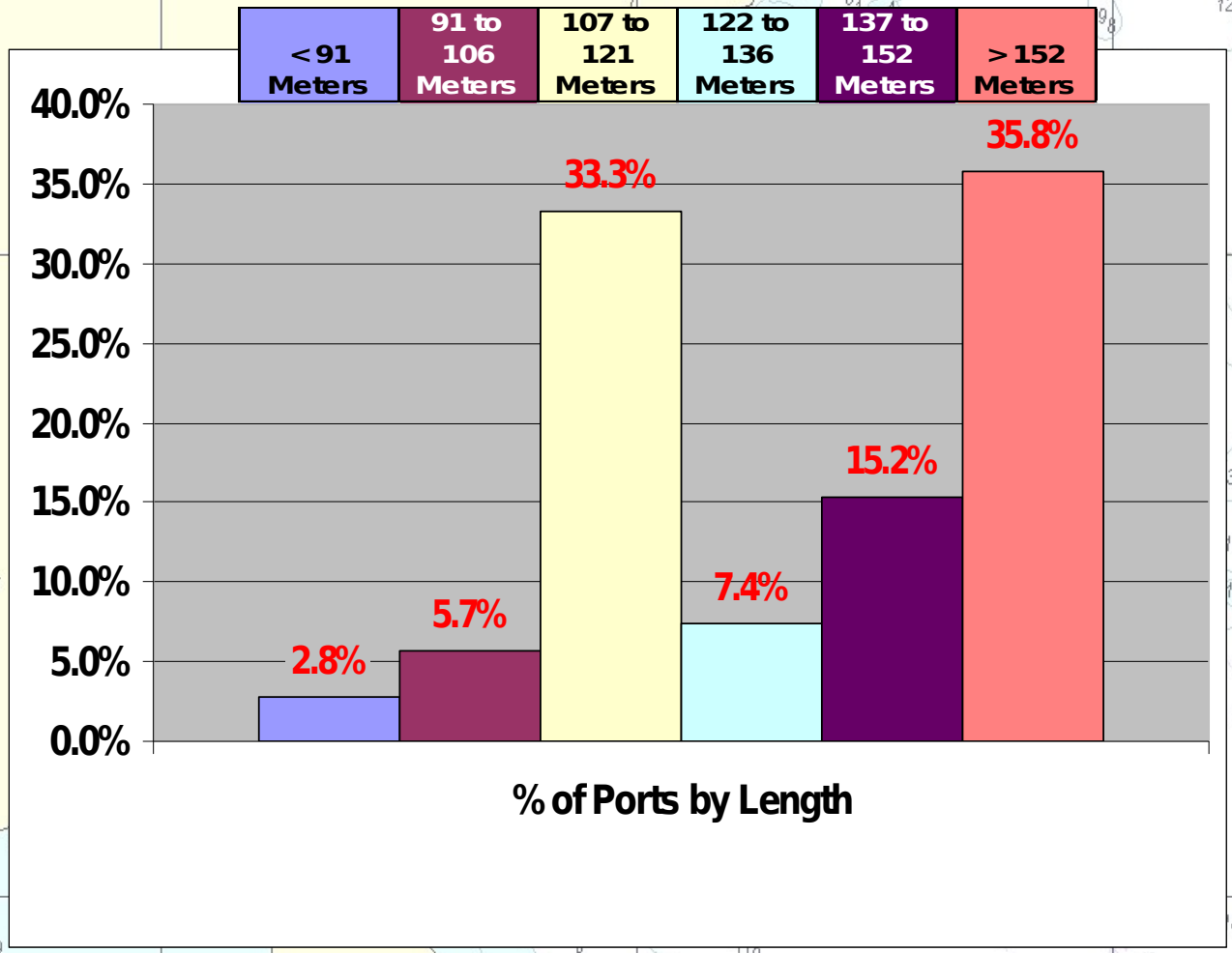
Percent of Ports by Depth

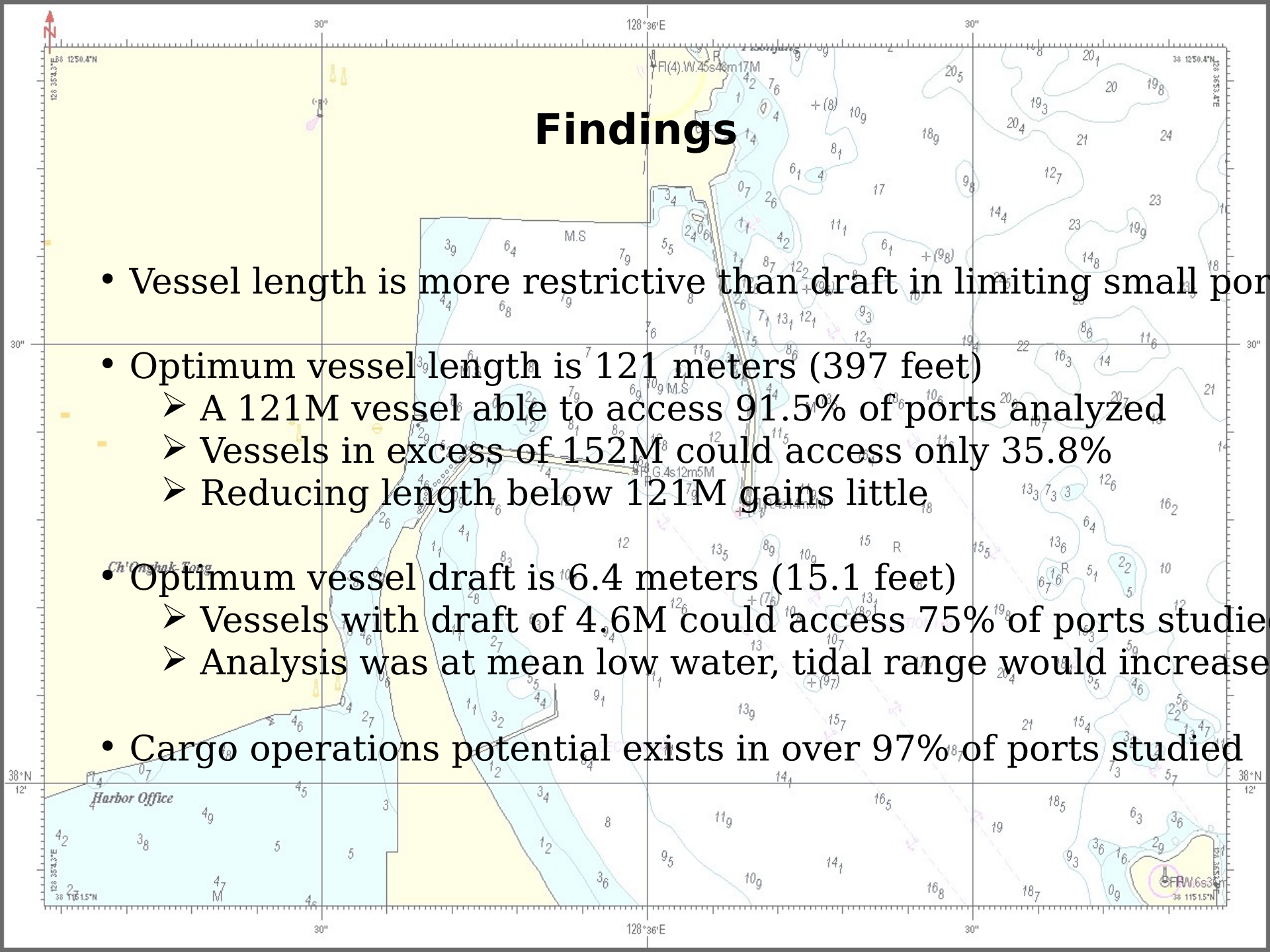


Length Range

Country	<91 Meters	91 to 106 Meters	107 to 121 Meters	122 to 136 Meters	137 to 152 Meters	>152 Meters	Total Ports
Bangladesh	0	0	0	0	0	2	2
Burma	1	0	0	1	2	0	4
Cambodia	0	0	0	0	0	1	1
Djibouti	0	0	1	0	0	1	2
Egypt	0	1	7	0	1	2	11
Eritrea	0	0	1	0	1	0	2
India	0	0	0	0	2	16	18
Indonesia	2	9	25	2	6	15	58
Iran	0	0	3	0	0	3	6
Iraq	0	0	1	0	0	0	1
Israel	0	0	2	0	0	3	5
Jordan	0	0	0	0	0	1	1
Kenya	0	0	2	0	0	0	2
Korea (North)	1	0	3	3	2	2	11
Korea (South)	0	0	1	2	7	22	32
Kuwait	0	0	2	0	0	2	4
Lebanon	0	0	0	0	0	2	2
Malaysia	0	1	4	2	3	4	14
Pakistan	0	0	0	0	0	1	1
Philippines	3	3	37	8	10	9	70
Somalia	0	1	2	0	1	1	5
Sudan	0	0	0	2	0	0	2
Syria	0	0	1	0	0	2	3
Taiwan	0	0	0	0	1	7	8
Thailand	0	0	0	0	3	2	5
VietNam	1	1	2	1	4	3	12
Total Ports	**8**	**16**	**94**	**21**	**43**	**101**	**282**
% of Ports by Length	**2.8%**	**5.7%**	**33.3%**	**7.4%**	**15.2%**	**35.8%**	

Percent of Ports by Length





Findings

- Vessel length is more restrictive than draft in limiting small por
- Optimum vessel length is 121 meters (397 feet)
  - A 121M vessel able to access 91.5% of ports analyzed
  - Vessels in excess of 152M could access only 35.8%
  - Reducing length below 121M gains little
- Optimum vessel draft is 6.4 meters (15.1 feet)
  - Vessels with draft of 4.6M could access 75% of ports studie
  - Analysis was at mean low water, tidal range would increase
- Cargo operations potential exists in over 97% of ports studied

Conclusions

- While draft and beam are important design consideration, lengt
the primary criterion for an intra-theater high-speed craft such as

- The design length of the TSV should be no more that 121 meter

- the design draft of the TSV should be no more than 4.6 meters

- While cargo operations potential exists in over 97% of the ports
unrestricted cargo operation would not be possible in a great ma
ports studied.
  - A detailed study of all available ports should be done.
  - The Army should develop rapid port enhancement equipmen
  techniques to enable full cargo operation through any port tha
  TSV may utilize.

The Future

- Continue the study

- Contract in place to document all ports in selected areas of the
  - Using nautical charts, maps, guides and other publications
    the internet
  - Assess all ports that may support the TSV and other Army v
  - Analyze and document each port for port accessibility by
    - ✓ Depth of water
    - ✓ Overall vessel length
    - ✓ Vessel beam
    - ✓ Infrastructure to support cargo operation
  - Develop a queriable, interactive database containing the da
    through the analysis

- The next step: Conduct on-site surveys of selected ports to vali
  data and round-out the database